

USAWC STRATEGY RESEARCH PROJECT

DOES THE ARMY NEED THE THEATER SUPPORT VESSEL? IF SO, HOW MANY?

by

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This SRP is submitted in partial fulfillment of the requirements of the Master of Strategic Studies Degree. The views expressed in this student academic research paper are those of the author and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the U.S. Government.

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ABSTRACT

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TITLE: Does the Army need the Theater Support Vessel? If so, how many?

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This research project will examine the Army's watercraft transportation requirements called for in Army Transformation policy, current capabilities provided by the Army Transportation Corps' watercraft fleet, and identified shortfalls. Using what planners believe to be the most likely future conflict scenarios, the paper will discuss challenges the Army faces deploying its forces to meet these potential future threats and the Army's recommended solution: the Theater Support Vessel (TSV). My conclusion will answer the question "Does the Army need the Theater Support Vessel? If so, how many?".

There are several documents which are drivers to transform watercraft lift. The National Security Strategy (NSS) states "This broad portfolio of military capabilities must also include the ability to ...ensure U.S. access to distant theaters.... There is a Quadrennial Defense Review (QDR) operational goal which states "Projecting and sustaining U.S. forces in distant anti-access or area denial environment and defeating anti-access and area-denial threats.... The Defense Planning Guidance (DPG) mandates "Requires forces with strategic agility" and "defeating or avoiding anti-access and area denial challenges by using multiple entry points in undeveloped regions".

This project's conclusion will recommend changes to Army watercraft inventory and stationing.

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DOES THE ARMY NEED THE THEATER SUPPORT VESSEL? IF SO, HOW MANY?

This paper will examine the Army's watercraft transportation requirements called for in Army Transformation policy, current capabilities provided by the Army Transportation Corps' watercraft fleet, and identified shortfalls. Using what planners believe to be the most likely future conflict scenarios, the paper will discuss challenges the Army faces deploying its forces to meet these potential future threats and the Army's recommended solution: the Theater Support Vessel (TSV). My conclusion will answer the question "Does the Army need the Theater Support Vessel? If so, how many?"

BACKGROUND

FUTURE FORCE TRANSPORTATION REQUIREMENTS.

In order for the Army to be relevant and ready it must transform from its Cold War structure to one that is increasingly flexible, sustainable, and rapidly deployable. To this last point, Army Transformation is focused on creating a future force which is capable of rapid unit deployments both for early entry and follow-on forces. To be relevant, these units must be able to deploy with full combat capabilities anywhere within the timelines established in the Army Transformation Vision¹. Army Transformation will also require transforming our system for strategic and operational mobility.

There are several documents which are drivers to transform watercraft lift. The National Security Strategy (NSS) states "This broad portfolio of military capabilities must also include the ability to ...ensure U.S. access to distant theaters..."². There is a Quadrennial Defense Review (QDR) operational goal which states "Projecting and sustaining U.S. forces in distant anti-access or area denial environment and defeating anti-access and area-denial threats..."³. The Defense Planning Guidance (DPG) mandates "Requires forces with strategic agility" and "defeating or avoiding anti-access and area denial challenges by using multiple entry points in undeveloped regions"⁴.

Eighty percent of all countries border on the coast, 80 percent of the world's capitols lie within 350 miles of the coast, and 95 percent of all the world's population lives within 500 miles of the coast. Because of this, the use of coastal ingress to theaters provides many advantages which could be exploited by a high-speed shallow-draft intra-theater sealift vessel⁵

The Army has the intra-theater requirement to transport forces, equipment, and sustainment in support of combat operations and other National Military and Security objectives. To this end, new Army intra-theater sealift capabilities must be developed as an essential

component of the future force. The current Army watercraft fleet is reaching the end of its economic useful life, has an old design, and its speed does not enable it to meet the Army's new deployment timelines⁶. The future force must be capable of deploying a brigade combat team anywhere in the world in 96 hours after wheels up (APOE or SPOE). It must be able to build a force into a warfighting division on the ground within 120 hours, and assemble 5 combat divisions in theater in 30 days. The demand on strategic mobility assets to accomplish this mission is overwhelming. Additionally, the increased demand to move forces by intra-theater lift and sustain them in a timely fashion will require new capabilities.

The Army is not facing a transportation problem for the first time in its 229 year history. In planning for the invasion of Europe during World War II, the Army required enough lift to move the massive invasion force from England to the beaches of France. "It did not make sense to build up a more massive attacking force without a reasonable hope of having in hand enough assault craft to lift it. Assault shipping, above all the LST, remained the crux of the problem, and the key to its solution was in the hands of the Americans..."⁷. American shipyards were able to surge and build not only enough Landing Ships Tank (LST) for the European invasion force but also enough for the island-hopping campaign in the Pacific.

In order to address transportation shortfalls, the Secretary of Defense approved the Mobility Requirements Study – 2005 (MRS-05) in January 2001. This study was the most comprehensive mobility study ever undertaken by DoD⁸. The study identified many transportation shortfalls among which were intra-theater lift capabilities. A high-payoff emerging commercial transportation technology which could provide a potential solution to this shortfall was also identified. A commercial high-speed sealift vessel, HMAS Jervis Bay, demonstrated military utility by carrying 600 troops with gear and 200 commercial-size vehicles a distance of 1,000 nautical miles and discharging them in less than 1 hour⁹. This movement was the equivalent of 4 ^{1/2} C-5 loads or 6 C-17 loads. The military is encouraging major commercial developers of high-speed sealift to incorporate military useful features such as strengthened decks to support tracked vehicles and a stern ramp for austere ports. The idea is have these vessels serve as an inexpensive "active ready reserve force."¹⁰ Another benefit of using this type of vessel for intra-theater lift is that they reduce in-theater logistics, thereby reducing strategic lift requirements without degrading the sustainability of the force. They do this by moving the personnel with the equipment without relying on strategic airlift from CONUS for example.

Advocates of the TSV believe in many ways the TSV reflects the essence of Army Transformation¹¹. As currently configured, the TSV will be suitable for the current, interim, and

future force. Unlike current deployment platforms, the TSV will be able to deliver combat forces autonomously, planning and rehearsing en route, as the situation at the destination may change, and arriving at the destination capable of immediate action even in the absence of developed infrastructure¹². As a TSV advocate, MG Dail, a former Chief of Transportation, said “we’re trying to get to the next level where we can be faster, where we can move equipment and the people and the leaders together, and reposition forces a lot faster”¹³. This means fielding a platform that the future force will need to fully achieve its capabilities for responsive application of ground combat power, without the benefit of world class air and sea ports. He also noted that the Army can quickly leverage off-the-shelf technology and capabilities to more economically acquire TSVs for the future force. The old acquisition paradigm takes much longer and results in extremely expensive, custom-made military equipment¹⁴.

CURRENT ARMY WATERCRAFT CAPABILITIES AND SHORTCOMINGS.

The Army requires the capability to conduct intra-theater movement of units and sustainment by sea to support our national objectives. Title 10, United States Code indicates that the Army shall “prepare for land combat, including the necessary aviation and watercraft support.”¹⁵ The Army currently has a watercraft fleet of 6 Logistics Support Vessels (LSV) and 35 Landing Craft Utility 2000 series (LCU-2000)¹⁶. The LSV provides worldwide transportation support of combat vehicles and sustainment cargo. It is primarily utilized for intra-theater line haul of cargo and equipment for tactical resupply missions to remote underdeveloped coastlines and inland waterways. It is also used for Joint Logistics Over the Shore (JLOTS) missions by discharging or back loading strategic sealift vessels such as the Large Medium Speed RO/RO (LMSR) Ship. All tracked and wheeled vehicles including the M1 tank can be transported on a LSV even during JLOTS operations. The LSV can deploy anywhere in the world with a maximum speed of 10 knots. It has a payload of 2000 short tons and/or 10,500 square feet of equipment or general cargo¹⁷.

The LCU-2000 has similar capabilities and uses as does the LSV, except that it is limited as a worldwide deployable vessel by distance, weather, and sea conditions. It can also be transported worldwide aboard Float On/Float Off (FLO/FLO) ships. In the self-deployment mode, it has a non-refuelable range of 6,500 miles with a maximum speed of 10 knots. The LCU-2000 is much smaller than the LSV and has a payload of 350 short tons and/or 2,500 square feet of equipment and general cargo¹⁸.

The current number and capabilities of the current Army watercraft fleet do not possess the required operational characteristics to provide future force commanders responsive and

agile intra-theater lift. The MRS-2005 cited previously revealed significant shortfalls in the total number of vessels. The fleet of 6 LSVs and 35 LCU-2000 were built with an Economic Useful Life (EUL) of 25 years¹⁹. The LSV fleet will begin to reach its EUL in 2013 with only 2 LSVs remaining as viable assets. Likewise, the LCU-2000 fleet will reach its full EUL by 2018. This combined loss represents 95percent of the Army's near-term intra-theater sealift capacity and almost eliminates the ability to conduct intra-theater lift missions to include JLOTS operations. The loss of this capability will place an extreme demand on air intra-theater assets. While this fleet's life could be extended, the design will not allow the addition of passenger space to allow concurrent lift of equipment with troops.

Another shortcoming of the current fleet is its speed – 10 knots. This slow speed does not provide responsiveness and agility envisioned for the future force under the Army Transformation plan. The 10-knot speed also puts the crew at risk in a flat bottomed vessel with a bow ramp because this speed is too slow to evade adverse weather conditions which produce extreme sea states²⁰. Neither the LSV nor the LCU-2000 is designed to carry passengers. Therefore, the current fleet lacks the ability to deliver a combat ready force. The personnel assigned to the equipment the fleet would carry into a combat zone would have to use another intra-theater transportation mode to marry up with their combat systems. Additionally, the current fleet requires external materiel handling equipment (MHE) such as port cranes, floating cranes, or container handling equipment (CHE) to load/unload containers or palletized cargo. This shortfall increases the support required at both the upload and discharge ports. Programmed improvements for the current fleet are focused on vessel reliability and maintainability not speed, survivability, passenger capacity, or self-containment. The vessels' design prohibits these improvements, essentially making them economically unsuitable for modification to support interim and future force capabilities²¹. Therefore, current Army watercraft cannot meet the Army's Transformation objectives.

WATERCRAFT TRANSPORTATION CAPABILITIES REQUIRED TO MEET ARMY TRANSFORMATION GOALS.

In contrast to the shortfalls outlined for the Army's current watercraft fleet, future watercraft need the capability to carry personnel as well as their combat equipment, need to be fast, need to be more survivable, and need a self-sustaining cargo handling capability. The future watercraft must have a shallow draft and be small enough in length and beam in order to access an increased number of ports and have a RO/RO capability for the Army's heaviest equipment, the M1A2 tank, and be utilized in an austere port. This vessel must also have a large non-refuelable range in excess of 1000+ miles and have organic MHE to be self-

sustaining. Finally, this vessel must have a C4ISR suite that will allow en route planning and rehearsals and be capable of receiving the latest intelligence updates all in a secure mode.

Another benefit of delivering troops ready to fight with their equipment is the elimination of the logistics footprint associated with Reception, Staging, and Onward Integration (RSOI) operations. All of these characteristics will allow the future force commander to employ forces over large distances attacking the enemy at a time or place he does not expect and in a manner for which he is unprepared to defend. This capability will give the future force commander an operational advantage²².

During the Vigilant Warriors 01 wargame, the U.S. and allied forces employed a mixture of current lift assets and promising future concepts. Of all current and future air and sea lift capabilities, shallow draft high-speed ships (SDHSS) and the Theater Support Vessel (TSV), because of their speed, throughput capability, and capacity most significantly impacted force closure rates²³. SDHSS and TSVs were the only platforms that could deliver troops and equipment together in sufficient size to bring immediate combat power to bear. Additionally, while in transit, commanders could conduct en route mission planning and receive intelligence updates. The TSV also did not require a large fixed port because it could discharge its combat power at ports with 15 foot depths, greatly increasing the number of ports it could utilize without losing efficiency. The TSV provided transformational capability and operational maneuver of Army formations²⁴. An additional benefit realized in the wargame was since the TSV can carry approximately 7 times as much as the C-17 and 24 times as much as the C-130, it had the added benefit of reducing intra-theater airlift requirements elsewhere in theater²⁵.

MILITARY SIGNIFICANT PORTS AS POTENTIAL SEA PORTS OF DEBARKATION (SPOD).

The Department of Defense conducted a Worldwide Port Study "Quick Look" of potential SPODs in the Central Command (CENTCOM) and Pacific Command (PACOM) areas of responsibility as these areas are viewed as most likely areas for future conflicts. Ports are considered militarily significant today if they can accommodate the LMSR which has a draft of 35 feet. Shallow draft sealift with a limited overall length provides the capability to access many more ports that are not considered militarily significant²⁶. For example, in Korea, shallow draft vessels expand the amount of accessible ports by 84 percent²⁷.

The significance of increasing port access in areas as volatile as Korea is key to providing commanders flexibility. LMSR capable ports are well known in Korea and are prime targets for conventional, unconventional, and potentially nuclear attack by the North Koreans. JLOTS operations in Korea west coastal areas are not practical due to high sea state conditions.

Shallow draft vessels expand access options greatly and provide the commander the flexibility required for future forces while giving a potential enemy many more access points to counter.

Country	<3 Meters	3 to 4.5 Mtrs	4.6 to 6 Mtrs	6.1 to 7.5 Mtrs	7.6 to 9 Mtrs	9.1 to 10.5 Mtrs	10.6 to 12 Mtrs	> 12 Mtrs	Total Ports
Bangladesh	0	1	0	0	1	0	0	0	2
Burma	0	1	2	0	1	0	0	0	4
Cambodia	0	0	0	1	0	0	0	0	1
Djibouti	0	1	0	0	1	0	0	0	2
Egypt	0	0	2	4	1	1	1	2	11
Eritrea	0	0	0	0	1	1	0	0	2
India	0	5	2	3	2	3	3	0	18
Indonesia	2	9	6	7	7	14	5	8	58
Iran	0	0	3	0	0	1	2	0	6
Iraq	0	0	1	0	0	0	0	0	1
Israel	0	1	1	0	0	1	1	1	5
Jordan	0	0	0	0	0	0	0	1	1
Kenya	0	1	1	0	0	0	0	0	2
Korea (North)	0	4	2	2	2	1	0	0	11
Korea (South)	1	21	4	2	1	3	0	0	32
Kuwait	0	2	1	0	0	0	0	1	4
Lebanon	0	0	0	1	0	0	1	0	2
Malaysia	0	3	6	1	3	0	0	1	14
Pakistan	0	0	0	0	0	1	0	0	1
Philippines	0	14	19	16	11	4	2	4	70
Somalia	0	1	1	1	0	2	0	0	5
Sudan	0	0	0	0	1	1	0	0	2
Syria	0	0	1	0	0	0	1	1	3
Taiwan	0	1	3	1	1	1	0	1	8
Thailand	0	2	0	0	1	2	0	0	5
Viet Nam	0	4	1	3	0	3	0	1	12
Total Ports	3	71	56	42	34	39	16	21	282
% of Ports by Depth	1.1%	25.2%	19.9%	14.9%	12.1%	13.8%	5.7%	7.4%	

TABLE 1. SELECTED PORTS IN CENTCOM AND PACOM AOR²⁸

This table indicates that the TSV can access about 74 percent of the 282 ports studied because its draft is between 4.6 and 6 meters. A LMSR can access only 27 percent of these same ports due to its draft of 9.1 to 10.5 meters. Also noted within the study was the length consideration. A TSV with a length of 121 meters (397 feet) can access 92 percent of these ports. Since depth limits TSV access to 74 percent of the ports, depth is the limiting factor²⁹. The TSV nearly triples the number of ports available to the combatant commander greatly increasing operational flexibility.

COMPARISON OF CAPABILITIES OF CURRENT WATERCRAFT AND THE TSV.

SPEED, RANGE, CARGO CAPACITY, AND TROOP CARRYING CAPACITY.

The Army's current fleet of intra-theater watercraft has been optimized to transport current heavy forces in the traditional JLOTS bare beach operations and will not meet the needs of the transforming Army. Most significantly the difference between current Army watercraft and the TSV is that the TSV will transport combat ready units within a theater eliminating the need for RSOI of soldiers, vehicles and equipment within the battle space. This is a tremendous leap ahead in capability and goes a long way to reducing the in-theater logistics footprint. The TSV also reduces the need for weather dependent JLOTS operations because it can access many more ports than strategic sealift.

Unlike the current Army watercraft fleet, the TSV provides the commander intra-theater movement and maneuver of combat ready unit sets within the Joint Operational Area (JOA) from intermediate staging bases (ISB), from sea bases, and from in-stream discharge. This capability allows the commander to pick the time and place to initiate action and thereby seize and hold the initiative³⁰. The TSV's capability mitigates the enemy's anti-access strategy because it can deliver combat units simultaneously through multiple points of entry denied to strategic shipping.

The current commercial off-the-shelf (COTS) TSV has the following capabilities:

- Average Speed: 40+ knots
- Self Deployment Range: 4726+ Nautical Miles @ 40 knots
- Intra-Theater Movement & Maneuver Lift of Intact Unit Sets: 350+ Troops plus Gear
- Cargo Space: 25-30K Square Feet
- Cargo Tonnage/Delivery Range: Up to 1,250 Short Tons (17 M1A2 Tanks)/1000 Nautical Miles³¹

A C4ISR suite will be an integral part of the TSV. This will give the deploying unit the capability to receive real-time intelligence updates. Units will be able to also receive change of mission orders, collaboratively plan with headquarters and forward elements, and conduct rehearsals while en route to the entry point³². Most importantly, a C4ISR package will provide the command and control necessary to manage the critical early entry piece of deployments when changes to plans are most likely. Current Army watercraft do not have a C4ISR capability.

A recent example of a TSV-type capability was demonstrated in Operation IRAQI FREEDOM (OIF). The *Spearhead*, a commercial fast, shallow draft ferry being leased from and Australian firm by the Army, moved the 101st Airborne Division's military police from Djibouti to Kuwait, making the 2,000-mile trip in two and a half days. The LSV would have needed 10 days to make the voyage and could only transport equipment, requiring the troops to fly separately³³.

The LSV has only a bow ramp which limits its up/download capability while the TSV will have an astern M1A2 capable ramp with an up to 45-degree slewing angle capability³⁴.

CREW SIZE AND COMPOSITION

The crew size for a TSV is equivalent that which currently crews the LSV: 31 crewmembers. The Military Occupation Specialties (MOS) of the LSV would be the same for a TSV. In leasing TSV-type vessels from Australian transportation firms, Army watercraft transportation personnel attended a short hands-on training course before crewing the vessel. The U.S. Army transportation school can easily modify its curriculum to meet TSV crew requirements.

COURSE OF ACTION COMPARISON OF CURRENT WATERCRAFT FLEET AND THE TSV USING POSSIBLE FUTURE CONFLICT SCENARIOS.

KOREA CONFLICT 2010 (REPOSITIONING A SBCT FROM PUSAN TO INCHON).

In April 2003, a Quick Reaction Requirements Analysis for the Theater Support Vessel was completed which compared current Army watercraft and the TSV supporting intra-theater movement of a SBCT during a conflict in Korea in 2010³⁵. The analysis used the SBCT currently being fielded and employed as a divisional brigade designed primarily for employment in Small Scale Contingencies (SSC)³⁶. The SBCT is specifically designed as a highly mobile (strategic, operational, and tactical), early entry combat force and is intended to be able to reposition within 96 hours of "first wheels up" and begin operations immediately upon arrival at the POD³⁷. At the operational level, the SBCT must be capable of intra-theater deployment by ground/sea or by C-130 air transport in order to provide the joint force commander the flexibility to employ the SBCT to exploit opportunities and hedge against uncertainty³⁸.

In this scenario, the combatant commander ordered the SBCT to be moved by sealift from vicinity Pusan to vicinity Seoul to support coalition counter-offensive operations. The designated SPOD for this operation is Inchon.

Accessing the Port of Incheon

Port Particulars

- Tidal variance restricts LMSR access to the Non-Tidal Basin
- TSV and Legacy craft can access either the Coastal Ferry Harbor or the Non-Tidal Basin
- The Non-Tidal Basin is controlled by a series of locks
- Lock interdiction requires an LMSR to conduct discharge operations off-shore and TSV / legacy craft to access in the Coastal Ferry Harbor

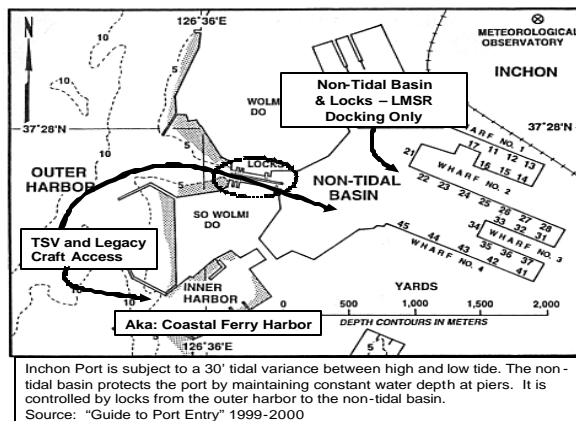


FIGURE 1. THE PORT OF INCHON.

The scenario begins with the deployment of sealift assets to Pusan. The speed of responsiveness is important to ensure intra-theater sealift assets are on-station to support the commander's scheme of maneuver³⁹.

TSV Block I and TSV-1X (Experimental) Strategic Responsiveness							
Type	Qty	From	To	Mode	Distance NM	Days	C-Date
TSV	2	Tacoma	Pusan	Self-Deploy	6382	9.4	9.4
TSV	3	HI	Pusan	Self-Deploy	3973	7	7
TSV	1	CENTCOM	Pusan	Self-Deploy	6183	9.1	9.1

TSV:

- 36 knot Average Speed
- Includes Refueling Stops
- C-Date is Arrival Date

Legacy Craft Strategic Responsiveness							
Type	Qty	From	To	Mode	Distance NM	Days	C-Date
LCU-2000	10	APS-4	Pusan	Self-Deploy	665	2.8	2.8
LCU-2000	10	APS-5	Pusan	Self-Deploy	6183	26.7	26.7
LSV	3	HI	Pusan	Self-Deploy	3973	16.5	16.5

Legacy Craft:

- 10 knot Average Speed
- APS vessels in ROS 10
- C-Date is Arrival Date

LMSR Strategic Responsiveness							
Type	Qty	From	To	Mode	Distance NM	Days	C-Date
LMSR	1	Diego Garcia	Pusan	Self-Deploy	4726	8.2	8.2

LMSR:

- 24 knot Average Speed
- USNS Watson Modeled
- C-Date is Arrival Date

Sources: DMA Pub 151 "Distances Between Ports"
MTMC Pam 700-4 "Vessel Characteristics for Shiploading"
TSV ORD and TSV-1X "Load Planning and Transportability SOP"
Army Watercraft Master Plan

TABLE 2. STRATEGIC RESPONSIVENESS OF INTRA-THEATER SEALIFT ALTERNATIVES⁴⁰.

Using the 6 Block I TSVs identified in the chart, it takes 20 individual sorties to reposition the entire SBCT and sustainment from Pusan to Incheon in 94.95 hours or 4 days.

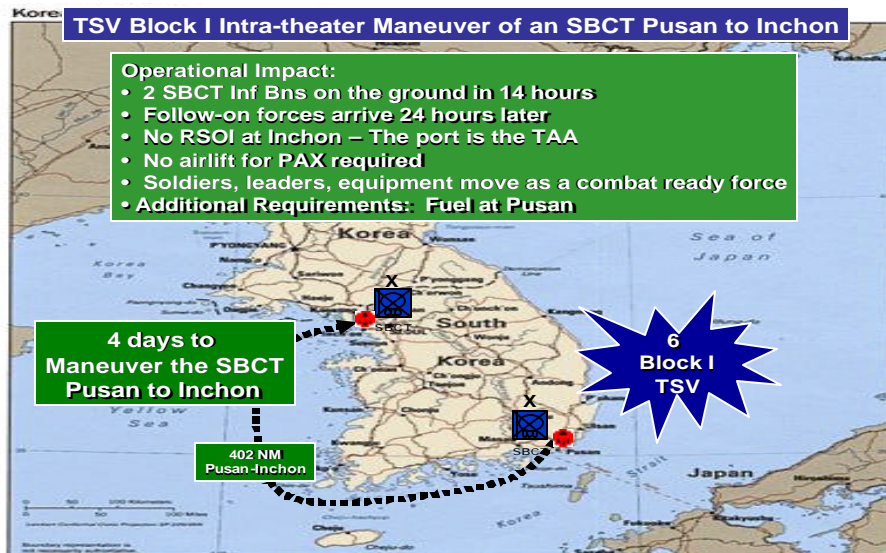


FIGURE 2. TSV BLOCK I INTRA-THEATER MANEUVER⁴¹

Using 20 LCU-2000s and 3 LSVs identified in the chart, it takes 95 individual sorties and 413 hours or 17.2 days to reposition the entire SBCT. Current watercraft do not move troops so it also takes 30 C-130 sorties to move the SBCT soldiers. This option also requires much more support at the SPOE and SPOD as well as a C-130 airfield close to the SPOD.

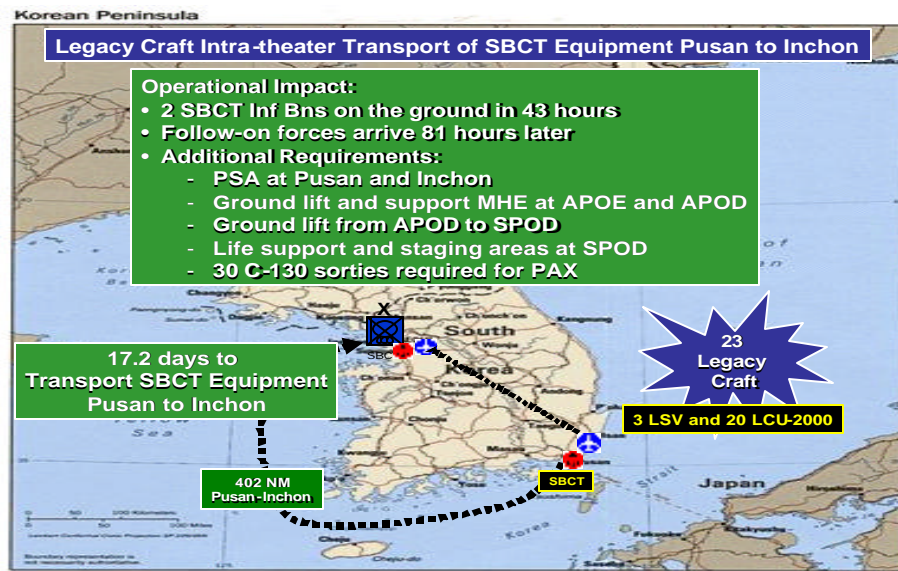


FIGURE 3. LEGACY CRAFT INTRA-THEATER MANUEVER⁴²

Using 1 LMSR individual sortie, it takes 156.75 hours or 6.53 days to reposition the entire SBCT if the non-tidal basin is secure. Again, 30 C-130 sorties would be required to move the SBCT soldiers. This option also entails much more support at the SPOE and SPOD as well as a C-130 capable airfield close to the SPOD.

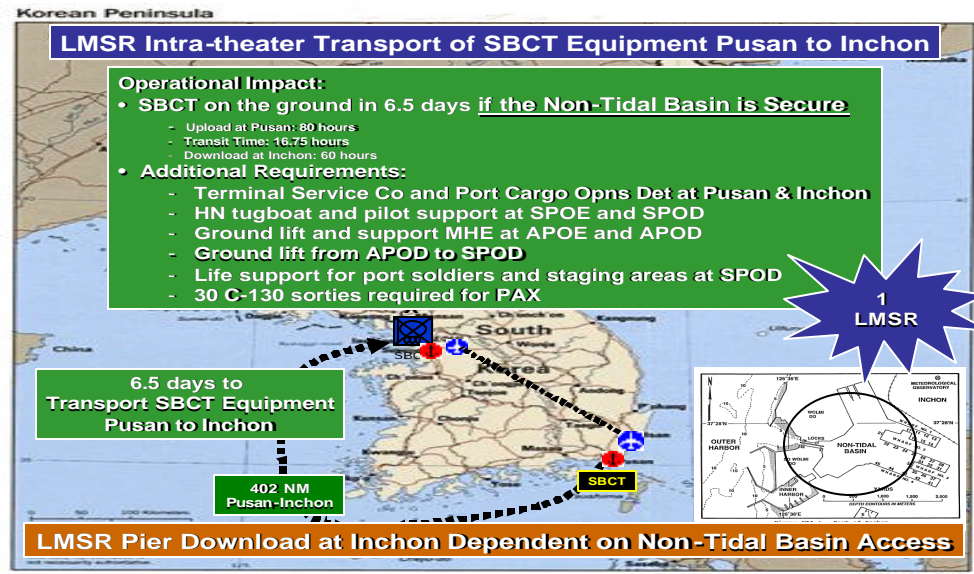


FIGURE 4. LMSR INTRA-THEATER MANUEVER⁴³

If the non-tidal basin is not secure, the LMSR would have to conduct an in-stream discharge and it would take approximately 185.75 hours or 7.7 days to reposition the entire SBCT given favorable weather and sea states. JLOTS operations are also extremely resource dependent.

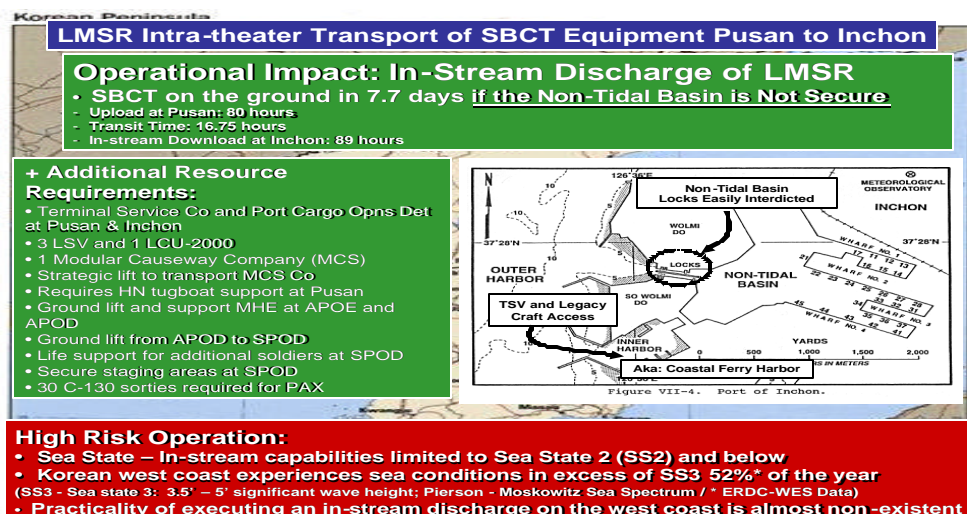


FIGURE 5. LMSR INTRA-THEATER MANUEVER (JLOTS)⁴⁴

The results of this study are summarized as follows:

<u>Alternative</u>	<u>Time to Transport SBCT (Days)</u>	<u>Vessels Used</u>	<u>Individual Sorties</u>
TSV Block I	4	6	20
LSV/LCU-2000	17.2	3/20	95
LMSR w/ Port Access	6.5	1	1
LMSR w/out Port Access	7.7	1	1

The bottom line is that only the TSV Block I was able to reposition the entire SBCT in the 96 hours required by the SBCT Operational and Organizational Plan. All the other intra-theater sealift options required C-130's to transport the troops and the LMSR JLOTS operation required a large amount of support to conduct the in-stream discharge.

KOREA CONFLICT 2010 (REPOSITIONING A SBCT FROM OKINAWA, JAPAN TO PUSAN, KOREA)

Another study was completed using a scenario-based analysis of current Army watercraft, the TSV, and C-17s to reposition a SBCT from Okinawa, Japan to Pusan, Korea, a total of 720 nautical miles. In this scenario, 3 LSVs and 20 LCU-2000 represent the current fleet, and a notional objective fleet to 12 TSV were used to move the SBCT.

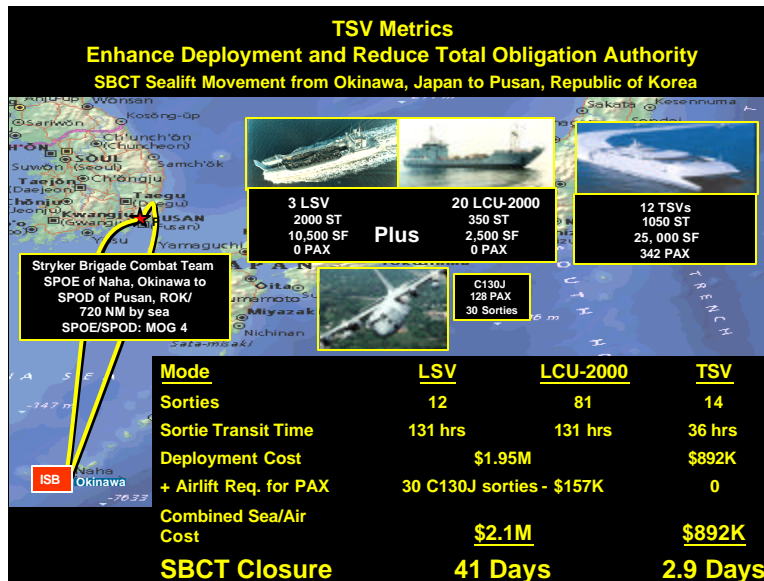


FIGURE 6. COMPARISON OF USING LEGACY CRAFT AND TSV. ⁴⁵

This scenario results in deploying the SBCT 99 percent faster and saves about \$1.2 million in transport operational costs ⁴⁶.

The study also looked at the results of using pure fleets of C-17s and C-130s to deploy the SBCT from Naha, Japan (closest APOE to Okinawa, Japan) to Pusan, Korea, a total distance of 543 nautical miles. In this analysis, a notional fleet of 12 TSVs were used as an alternative to 12 C-17s and 120 C-130s. The analysis did account for the maximum on ground (MOG) constraints for arrival or departure airfields and seaports.

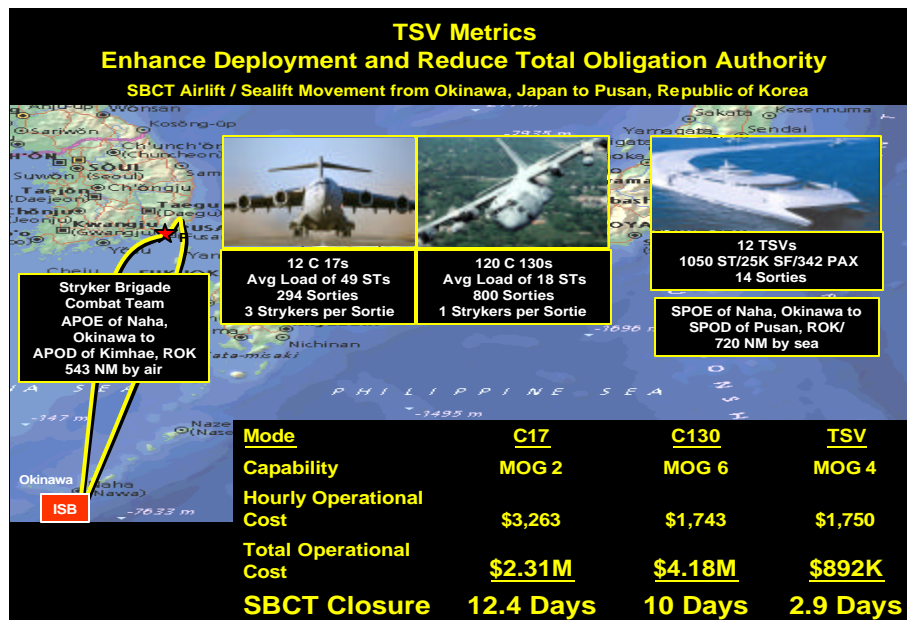


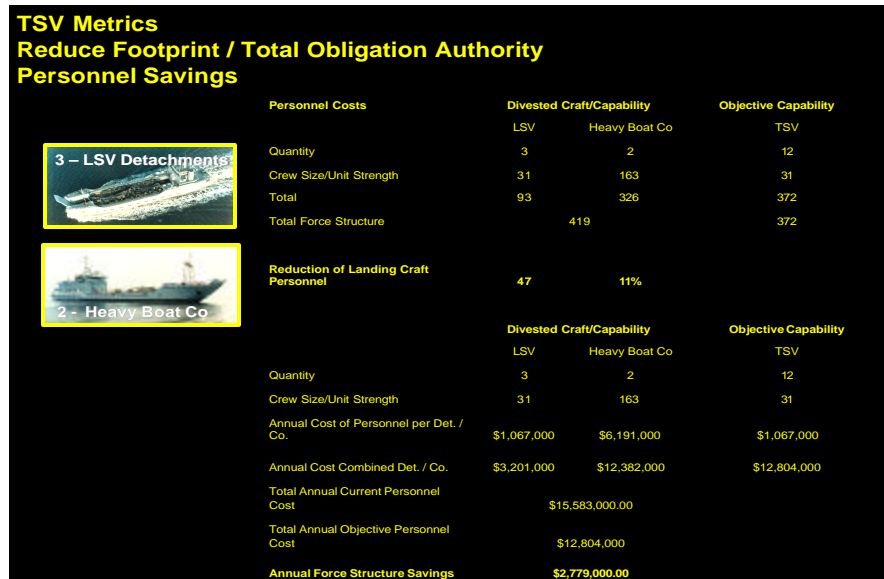
FIGURE 7 COMPARISON OF USING C-17, C-130, AND TSV. ⁴⁷

The analysis concluded that fourteen sorties of the 12 TSVs could transport the SBCT in 2.9 days. In contrast, it took 800 C-130 sorties or 294 C-17 sorties to accomplish the same mission in the days indicated on the chart⁴⁸. There was also a considerable transportation cost savings when the notional TSVs were used.

IMPACT OF BUYING THEATER SUPPORT VESSELS (TSV)

CREWING.

The crew size on an LSV is 31 personnel. This is the same crew required on the TSV. If the Army were to buy the TSV and phase out the LSV, it would be a matter of an on-for-one exchange with no change in overall watercraft-qualified personnel strength. Since the TSV has much more capability than both the LSV and the LCU-2000, it would make sense to use the crews from phased out watercraft to man the new TSVs. For example, in the chart below, 3 LSVs and 20 LCU-2000s (2 Heavy Boat Companies) are replaced by 12 TSVs with an overall reduction of numbers of personnel and related costs and a tremendous increase in capability as outlined in section III b.

FIGURE 8 PERSONNEL MANNING FOR LEGACY CRAFT AND TSV.⁴⁹

Without adding end-strength, the Army Transportation Corps can currently accommodate the addition of 12 TSVs to the current fleet with 10 in the Active Component and 2 in the Reserve Component. This can be accomplished by inactivating certain units and cascading selected watercraft into the USAR⁵⁰.

STATIONING.

The four SBCTs the Army is currently fielding are all worldwide deployable but are primarily Pacific postured in support of an emerging national strategy⁵¹. However, the Center of Army Analysis (CAA) recently completed an analysis that addressed the required number of TSVs and the corresponding distribution plan needed to support the Army Strategic Plan which cited the Pacific region as only two of five possible conflict regions by the year 2010. The Pacific potential conflict areas are well know – Korea and China-Taiwan. The other three areas the study concluded as potential conflict areas are the Caspian Sea Region, Iran, and Columbia⁵².

The CAA studied concluded that 16 TSVs are required to move a SBCT within the 96 hour standard to these five future potential conflict areas by 2010. It recommended stationing 2 in NORTH/SOUTHCOM, 5 in EUCOM, 2 in CENTCOM, and 7 in PACOM⁵³. A couple of the general assumptions used in providing this recommended stationing plan was that the

Combatant Commander (COCOM) required a self sustaining force to mitigate early entry risk and that the SBCT is the minimum size force capable of self sustainment⁵⁴. The rationale used for the different number of TSVs at the COCOMs was the distances involved. The Pacific Area of Operations (AOR) is a vast area and therefore required more TSV than other regions. To deliver an entire SBCT up to a distance of 1,250 nautical miles requires 7 TSVs where 14 TSVs are required to deliver a SBCT from 1,250 to 3,500 nautical miles.

The CAA study also noted that 7 TSVs represent an important threshold. This number of TSVs can deliver an entire SBCT up to 1,250 nautical miles (with 2 round trips) and that most of the potential future conflict areas are within the 1,250 nautical miles operational range given the stationing recommendation.⁵⁵.

THE TSV AS A JOINT DEPLOYMENT PLATFORM.

ARMY MARINE CORPS BOARD 3-STAR REVIEW RESULTS.

The United States Marine Corps (USMC) is also studying the utility of using a High-Speed Shallow-Draft Vessel for its future operational requirements. A review of both programs determined they are very similar. The fast-ferry vessels currently leased by both services are of similar type, have similar characteristics, capabilities, and are envisioned doctrinally to be used in much the same way⁵⁶. This Army Marine Corps Board (AMCB) 3-Star Review agreed that the services must proceed toward a joint program. They further determined that while the services' missions are different, the hull form is very similar. This indicates the potential to design a ship with a high degree of modularity to support the Marines as well as the Army, Navy, and SOCOM missions⁵⁷.

The AMCB also discussed using the TSV to support the Navy's concept of Sea Basing. Both services believe Sea Basing will be a crucial future Joint military capability for the U.S. The board saw the TSV as a high priority development program to interface with the operational needs of sea bases⁵⁸. The AMCB recommended developing a Joint Program Office, evolve a common Operational and Organizational plan, and provide a single interchangeable material solution⁵⁹.

Requiring the TSV to become a "Joint Program" also fits the Chief of Staff of the Army's (CSA) initiative of making the Army a more "Joint" service which is relevant and ready. The CSA wants to leverage new programs so that the services are more interdependent. The CSA's intent is better served by developing the TSV for both the Marines and the Army.

DIRECTIVE FROM THE OFFICE OF THE UNDERSECRETARY OF DEFENSE.

As a consequence of the AMCB results, the Office Of The Undersecretary Of Defense, Defense Systems directed the Assistant Secretary Of The Army, Acquisitions, Logistics And Technology, and the Assistant Secretary Of The Navy, Research, Development And Acquisition to formalize the coordination on developing a joint high-speed vessel program⁶⁰. As a result, in October 2003, the Program Executive Office (PEO) Combat Support & Combat Service Support and PEO Ships signed a Memorandum of Agreement to establish an Executive Steering Committee to coordinate and oversee high-speed vessel development and production.

RECOMMENDATIONS.

ARMY REQUIREMENT FOR TSVS.

Since the United States reduced its forward presence overseas at the end of the Cold War, the centerpiece of U.S. defense strategy has been power projection – the ability to rapidly and effectively deploy and sustain forces in dispersed locations.

The commander of USTRANSCOM has said the U.S. Air Force has a requirement for 222+ C-17's to meet the DoD mobility requirements⁶¹. A C-17 has the capability to lift 77 short tons and 54 troops. At a cost of \$180 million per copy, 222 airframes represents a cost of approximately \$40 billion. Although a great asset, putting this much money into one capability comes at the expense of reducing flexibility.

With the TSV costing \$168 million, which includes maintenance overhead, testing, and a simulator, buying 12 TSVs would be a capital investment of just over \$2 billion. The TSV has the capability of to lift 1050 short tons and 354 troops. Reducing the C-17 budget by 11 each C-17s (from 222 to 211) would cover the cost of 12 TSVs will give the Joint Warfighter greater agility and flexibility in employing ground forces within the Joint Operation Area (JOA).

The CAA requirements and stationing analysis recommended an Army requirement of 16 TSVs which includes a single maintenance float and a training support vessel. The Combined Arms Support Command (CASCOC) conducted an Analysis of Alternative (AOA) and recommended eliminating the maintenance float and training vessel for a total requirement of 12 TSVs. Both analyses base conclusions on the Army's need to provide the COCOM the ability to operationally position a SBCT within the Theater of Operations. CAA concluded the minimum mission essential number of TSVs available to each COCOM to be seven, while CASCOC's AOA concluded six was sufficient⁶².

Recommend the Army procure and crew 12 TSVs. This number will meet the AOA minimum essential number required to move a SBCT in a COCOM's AOR. This

recommendation does not include a maintenance float (assumes risk) and relies on hands-on training for crew ratings and proficiency. The Army's Transportation Corps has also indicated that it can man up to 12 TSVs with current strength with 10 TSVs in the Active Component and 2 in the Reserve Component. Getting an increase in Army Transportation personnel end strength would be problematic at best given the current climate against buying more end strength at the expense of new systems.

STATIONING TSVs.

Recommend stationing the 12 TSVs as follows:

<u>Combatant Command</u>	<u>Number</u>
PACOM	6
EUCOM	2
CENTCOM	2
NORTH/SOUTHCAM	2

This stationing plan provides PACOM, which has two potential conflict scenarios in its AOR, with the number of TSVs it needs to re-position a SBCT without augmentation. The remaining four COCOMs would have to rely on augmentation from one another to have the lift to move a SBCT within the 96 hour requirement. However, these COCOMs are can surge their assigned TSVs to support one another fairly quickly given sufficient time – six days to self-deploy TSV from the farthest location of remaining COCOMs to provide support.

CONCLUSION

The value a TSV gives the COCOM is getting a SBCT to the fight faster while increasing access options. It also allows en route planning and reduces the logistics footprint by eliminating the RSOI requirement. In short, the TSVs ability to rapidly transport combat-ready troops and equipment to a wide range of austere locations will make it a highly valuable asset to the theater commanders⁶³.

The TSV brings a revolutionary capability to the way in which the Army deploys and fights. In much the same way that wind powered ships were displaced by steam, fast monohull, bihull, or surface effect ships will displace today's large relatively slow vessels. The TSV is the first step forward in this era of fast ships. The Army is looking at this ship as an operational maneuver platform where soldiers and equipment are deployed in a ready to fight configuration, enabling the Deploy-Employ-Sustain (DES) concept. The TSV is envisioned to be used as an intra-theater deployment platform (up to 1250nm) and most probably the vessel and land side

connector in the joint Sea Basing concept. With all of the above said, it is in the Army's best interest to invest in, buy, and man, at least 12 TSVs to support the Army's warfighting concept for the combatant commanders.

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ENDNOTES

¹ Department of the Army, *Revised Operational Requirements Document (ORD) For The Theater Support Vessel (TSV) ACAT III*, (Washington, D.C.: U.S. Department of the Army, 14 March 2003), 129.

² "TSV CONOPS," briefing slides to MG Grazioplene, G8-FD, Washington D.C., U.S. Army Staff, 27 March 2003.

³ Ibid, 2.

⁴ Ibid.

⁵ Department of the Army, *Revised Operational Requirements Document (ORD) For The Theater Support Vessel (TSV) ACAT III*, (Washington, D.C.: U.S. Department of the Army, 14 March 2003), 10.

⁶ Ibid.

⁷ Kent Greenfield, *American Strategy In World War II* (Westport, CT: Greenwood Press, Publishers, 1963), 39.

⁸ Joint Chiefs of Staff, *Focused Logistics*, (Washington, D.C.: U.S. Joint Chiefs of Staff, 2003), 21.

⁹ Ibid., 24.

¹⁰ Ibid.

¹¹ "Theater Support Vessel: On the Spearhead of Army Transformation,"; available from http://www.eustis.army.mil/_New_WEB/theater_support_vessel.htm; Internet; accessed 5 January 2004.

¹² Joint Chiefs of Staff, *Joint Operations Concepts*, (Washington, D.C.: U.S. Joint Chiefs of Staff, November 2003), 13

¹³ Gerry J. Gilmore, "Joint Venture` Craft Cruises to the Future,"; available from <http://www.amc.army.mil/amc/pa/releases02/joint.html> ; Internet; accessed 17 December 2003.

¹⁴ Ibid.

¹⁵ Department of the Army, *Operational and Organizational (O&O) Plan For The Theater Support Vessel (TSV)*, (Washington, D.C.: U.S. Department of the Army, 14 November 2002), 9.

¹⁶ Department of the Army, *Revised Operational Requirements Document (ORD) For The Theater Support Vessel (TSV) ACAT III*, (Washington, D.C.: U.S. Department of the Army, 14 March 2003), 4.

¹⁷ Department of the Army, *Operational and Organizational (O&O) Plan For The Theater Support Vessel (TSV)*, (Washington, D.C.: U.S. Department of the Army, 14 November 2002), 12

¹⁸ Ibid.

¹⁹ Department of the Army, *Revised Operational Requirements Document (ORD) For The Theater Support Vessel (TSV) ACAT III*, (Washington, D.C.: U.S. Department of the Army, 14 March 2003), 4.

²⁰ Ibid.

²¹ Ibid.

²² BG Huba Wass de Czege (Ret) and LTC Zbigniew M. Majchrzak (Ret) "Enabling Operational Maneuver From Strategic Distances," *Military Review* (May-June 2002): 3.

²³ LTC Jonathan A. Markol jonathan.markol@hqda.army.mil , ""TSV Mission Statement," electronic mail message to LTC John M. Reich john.reich@hqda.army.mil , 28 October 2003.

²⁴ "Logistics Transformation", available from <http://www.army.mil/aps/2003/realizing/transformation/institutional/logistics.html>, Internet, accessed 17 December 2003.

²⁵ Ibid.

²⁶ Department of the Army, *Quick Reaction Requirements Analysis For The Theater Support Vessel (TSV)*, (Washington, D.C.: U.S. Department of the Army, 4 April 2003), 1.

²⁷ Ibid, 7.

²⁸ Ibid.

²⁹ Ibid.

³⁰ "Theater Support Vessel", briefing slides with scripted commentary by COL Braun, Washington D.C., U.S. Army Staff, 20 October 2003

³¹ Ibid, 5.

³² "Theater Support Vessel: On the Spearhead of Army Transformation,"; available from http://www.eustis.army.mil/_New_WEB/theater_support_vessel.htm; Internet; accessed 17 December 2003.

³³ SSG Nate Orme, USA, "Defense Link. Army Catamaran Hauls Equipment Double-Time," 8 September 2003; available from http://www.defenselink.mil/news/Sep2003/n09082003_200309084.htm. pg 2

³⁴ Ibid, 3.

³⁵ Department of the Army, *Quick Reaction Requirements Analysis For The Theater Support Vessel (TSV)*, (Washington, D.C.: U.S. Department of the Army, 4 April 2003), 1.

³⁶ Ibid, 7.

³⁷ Ibid.

³⁸ Ibid.

³⁹ Ibid, 9.

⁴⁰ Ibid, 10.

⁴¹ Ibid, 11.

⁴² Ibid, 12.

⁴³ Ibid, 13.

⁴⁴ Ibid, 14.

⁴⁵ Department of the Army, *Revised Operational Requirements Document (ORD) For The Theater Support Vessel (TSV) ACAT III*, (Washington, D.C.: U.S. Department of the Army, 14 March 2003), 121.

⁴⁶ Ibid, 123.

⁴⁷ Ibid, 124.

⁴⁸ Ibid.

⁴⁹ Ibid, 123.

⁵⁰ David B. Crum crumd@lee.army.mil , "TSV Details," electronic mail message to LTC Mark A. Westbrook mark.westbrook@hqda.army.mil, 14 November 2003.

⁵¹ COL Edward J. Filiberti, COL James R. Oman, and COL James H. Thomas, *The Army Transformation: A Case Study*, (Carlisle Barracks: U.S. Army War College, 12 October 2001), 5.

⁵² "Theater Support Vessel Distribution and Stationing Analysis", briefing slides with scripted commentary by CPT Joseph A. Burger, Washington D.C., Center for Army Analysis, 20 August 2003.

⁵³ Ibid, 7.

⁵⁴ Ibid.

⁵⁵ Ibid, 14.

⁵⁶ LTC Jonathan A. Markol jonathan.markol@hqda.army.mil , "G4 EXUM," electronic mail message to LTC John M. Reich john.reich@hqda.army.mil , 2 November 2003.

⁵⁷ "Army Marine Corps Board, Army Theater Support Vessel (TSV), USMC High Speed Vessel (HSV)", briefing slides with scripted commentary , Washington D.C., 19 November 2003, 7.

⁵⁸ Ibid, 8.

⁵⁹ Ibid, 22.

⁶⁰ Office of the Under Secretary of Defense, "Proposed Oversight of Multiple High Speed Ship Efforts," memorandum for Secretary of the Army and Navy, Washington, D.C., 14 August 2003.

⁶¹ The ideas in this paragraph are based on remarks made by a speaker participating in the Commandant's Lecture Series.

⁶² Department Of The Army, "Army Requirement for Theater Support Vessel (TSV)," memorandum for Commanders of FORSCOM, PACOM, EUCOM, 3rd U.S. Army, and Army Reserve, Washington, D.C., 21 November 2003.

⁶³ "Enabling Access Assurance for Army Forces," *Association of the United States Army*, May 2002, 1.

BIBLIOGRAPHY

- "Army Marine Corps Board, Army Theater Support Vessel (TSV), USMC High Speed Vessel (HSV)." Briefing slides with scripted commentary. Washington D.C., 19 November 2003.
- Crum, David B. crumd@lee.army.mil. "TSV Details." Electronic mail message to LTC Mark A. Westbrook mark.westbrook@hqda.army.mil. 14 November 2003.
- "Enabling Access Assurance for Army Forces." *Association of the United States Army*, May 2002.
- Filiberti, COL Edward J., COL James R. Oman, and COL James H. Thomas. *The Army Transformation: A Case Study*. Carlisle Barracks: U.S. Army War College, 12 October 2001.
- Gilmore, Gerry J. "'Joint Venture' Craft Cruises to the Future." Available from <http://www.amc.army.mil/amc/pa/releases02/joint.html> ; Internet. Accessed 17 December 2003.
- Greenfield, Kent. *American Strategy In World War II*. Westport, CT: Greenwood Press, Publishers, 1963.
- "Logistics Transformation", available from <http://www.army.mil/aps/2003/realizing/transformation/institutional/logistics.html>. Internet. Accessed 17 December 2003.
- Markol, LTC Jonathan A jonathan.markol@hqda.army.mil. "TSV Mission Statement." Electronic mail message to LTC John M. Reich john.reich@hqda.army.mil. 28 October 2003.
- Markol, LTC Jonathan A. jonathan.markol@hqda.army.mil , "'G4 EXUM." Electronic mail message to LTC John M. Reich john.reich@hqda.army.mil. 2 November 2003.
- Office of the Under Secretary of Defense. "Proposed Oversight of Multiple High Speed Ship Efforts." Memorandum for Secretary of the Army and Navy. Washington, D.C., 14 August 2003.
- Orme, Staff Sergeant Nate Orme, USA. "Defense Link. Army Catamaran Hauls Equipment Double-Time." 8 September 2003. Available from http://www.defenselink.mil/news/Sep2003/n09082003_200309084.htm.
- "Theater Support Vessel Distribution and Stationing Analysis." Briefing slides with scripted commentary by CPT Joseph A. Burger. Washington D.C., Center for Army Analysis, 20 August 2003.
- "Theater Support Vessel." Briefing slides with scripted commentary by COL Braun. Washington D.C., U.S. Army Staff, 20 October 2003.
- "Theater Support Vessel: On the Spearhead of Army Transformation." Available from http://www.eustis.army.mil/_New_WEB/theater_support_vessel.htm; Internet. Accessed 5 January 2004.

"TSV CONOPS." Briefing slides to MG Grazioplene, G8-FD, Washington D.C. U.S. Army Staff, 27 March 2003.

U.S. Department of the Army. *Operational and Organizational (O&O) Plan For The Theater Support Vessel (TSV)*. Washington, D.C.: U.S. Department of the Army, 14 November 2002.

U.S. Department of the Army. *Revised Operational Requirements Document (ORD) For The Theater Support Vessel (TSV) ACAT III*. Washington, D.C.: U.S. Department of the Army, 14 March 2003.

U.S. Department Of The Army. "Army Requirement for Theater Support Vessel (TSV)." Memorandum for Commanders of FORSCOM, PACOM, EUCOM, 3rd U.S. Army, and Army Reserve. Washington, D.C., 21 November 2003.

U.S. Department of the Army. *Quick Reaction Requirements Analysis For The Theater Support Vessel (TSV)*. Washington, D.C.: U.S. Department of the Army, 4 April 2003.

U.S. Joint Chiefs of Staff. *Focused Logistics*. Washington, D.C.: U.S. Joint Chiefs of Staff, 2003.

U.S. Joint Chiefs of Staff. *Joint Operations Concepts*. Washington, D.C.: U.S. Joint Chiefs of Staff, November 2003.

Wass de Czege, Brigadier General Huba (Ret) and Lieutenant Colonel Zbigniew M. Majchrzak (Ret). "Enabling Operational Maneuver From Strategic Distances," *Military Review* (May-June 2002).